PMT200 SERIES DEHYDRATOR

USER MANUAL

Bulletin AE01B-A0468-001

Rev: B
7 DEC 04

TABLE OF CONTENTS

SECTION 1	General Information	3
	Introduction	3
	Description	3
	Operation	3
	Multiple Alarm Option	4
	Specifications	5
SECTION 2	Installation	6
	Unpacking and Inspection	6
	Controls and Displays	6
	Installing the Dehydrator	7
	Slab Mounting	7
	Power Connections	7
	AC Power	7
	Connecting Low Pressure Alarm Output	8
	Connecting Dehydrator to the Transmission Line	8
	Purging the Transmission Line	9
SECTION 3	Maintenance	10
	Regular Maintenance	10
	Preventive Maintenance	10
	6000 Hour Overhaul	10
	Annual Maintenance	11
	Parts Replacement and Dehydrator Overhaul	11
	Dehydrator Filter Element Replacement	11
	Service Restoration	13
SECTION 4	Troubleshooting	14
	Problem/Solution Table	14
	Schematic Diagram with All Option	15
	Alarm Schematic Diagram	16
SECTION 5	Replacement Parts	17
SECTION 6	Customer Service	17
	Warranty	19

General Information
Section 1

1.1 Introduction

This manual contains the information you need to install, operate and maintain your PMT200 Series DryLine® dehydrator. Please take the time to read this manual before attempting to operate or service the unit.

1.2 Description

PMT200 Series dehydrators provide dry air for pressurizing small (up to 40 cubic feet, or 560 liters, in volume) antenna and transmission line systems. The dehydrators produce -50ºF (-45ºC) dewpoint dry air at an output rate of 0.2 cubic feet (1.4 liters) per minute.

Each dehydrator consists of an electrically-driven air compressor, a membrane dryer assembly, an automatic transmission line pressure sensing system and a low-pressure alarm output housed in a rigid metal chassis. It is designed to mount directly to the wall or as a free-standing unit. Their front panels feature a pressure gauge, an indicating on/off switch, a resettable circuit breaker, and a run time meter. For easy serviceability, power connections, alarm output connections and all filter elements are accessible from the front of the unit.

The PMT200 maintains transmission line pressures at 5.0 lb/in^2 (34 kPa). It is intended for standard microwave antenna applications and any other transmission line pressurization requirement that supports a medium pressure limit.

1.3 Operation

PMT200 Theory of operation.

The PMT200 series of DryLine dehydrators, while similar in moisture removal technology, operates differently than the rest of the DryLine series of dehydrators. In order to provide a constant supply of dry air to small air volume systems, and to maintain an acceptable dryness level in the product air stream, a high-pressure reservoir tank is utilized. This reservoir tank is connected to a pressure regulator and orifice to yield a fixed output pressure of 5.0 psi and a nominal flow rate of 0.2 SCFM. In addition to supplying the output air, the reservoir tank also provides the dry air for the feedback loop. The feedback loop is necessary to maintain the dryness of the membrane cartridge.

During normal operation, the bleed air in the feedback loop will cause the pressure to drop in the internal reservoir tank, and the PMT200 compressor will cycle automatically. These cycles will take place regardless of the system volume or condition of the transmission line the dehydrator is connected to. The rate of these cycles, however, will vary.

When connected to a very tight system, or the output is capped, the dehydrator will cycle approximately every 60 minutes and maintain 5.0 psi system pressure while providing close to 0.2 SCFM of dry air. A system that leaks will have a cycle time somewhere in between, depending on the severity of the leaks.

The pressure gauge will also reflect a pressure between 0 and 5.0 psi while the output flow is between 0 and 0.2 SCFM. The pressure gauge senses pressure beyond the flow control orifice and will show the actual pressure in the waveguide.

During the initial pressurization of the transmission line, the dehydrator will cycle every 2 to 4 minutes with the system at 0 psi pressure. As the dehydrator pressurizes the system, the cycle times will increase and the pressure will rise until the dehydrator output is balanced with the system leak, at which point the cycle times will stabilize.

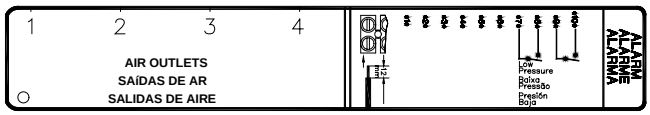
1.4 Multiple Alarm Option

This optional assembly is designed to provide the additional Excess Run, High Humidity and Power Fail alarms to Andrew Dehydrators. All alarms are Form C dry contacts and are factory set for continuity at alarm.

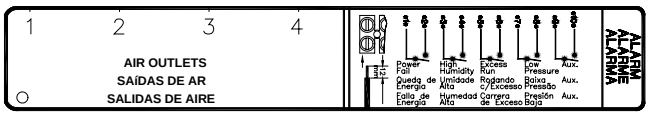
The external alarm monitoring system (not included) is

connected to the terminal strip located on top of the cabinet. A small slotted screwdriver is necessary to make the connections.

The connection to the alarm strip is as follows, and refer to Figure 1 for correct locations and colors of the wires on the terminal strip.



Low Pressure Alarm



Multi Alarm

Figure 1

Term.	Function	Wire Color
1	Power Fail Com	Black
2	Power Fail Alarm	Red
3	Humidity Com	Green
4	Humidity Alarm	Brown
5	Excess Run Com	Blue
6	Excess Run Alarm	White
7	Low Press. Com.	Grey
8	Low Press. Alarm	Orange

Alarm Definitions:

Power Fail: Activates when power is removed from the dehydrator. This includes turning the power off at the switch.

High Humidity: Activates when system or dehydrator output humidity rise above 7.5% relative humidity. At initial installation, this alarm will continue to alarm until the system has been properly purged.

Excess Run: Factory strapped run time set in accordance with the normal run time for the dehydrator application. Selectable times are 10, 30, 120 and 240 minutes, with the 10 minute selection used on the PMT200.

Low Pressure: If system pressure falls significantly below the low-pressure trigger point, the low-pressure alarm sensor will activate an alarm contact. This alarm is an indication of a significant system leak or a dehydrator failure.

Changing Alarm Outputs: Low Pressure Alarm

Alarm	Factory setting	Where To Reset
Low Pressure	Normally Open (N.O.)	Alarm switch center term.

Expanded Alarms

Alarm	Factory setting	Where To Reset
Low Pressure	Normally Open (N.O.) A-B	Alarm switch center term.
Mains (Power)	Normally Closed (N.C.) B-C	Power Fail Jumper JP7 on Alarm PCB
Excess Run	Normally Open (N.O.) A-B	Jumper JP9 on Run Alarm PCB
High Humidity	Normally Open (N.O.) A-B	Jumper JP8 on Alarm PCB

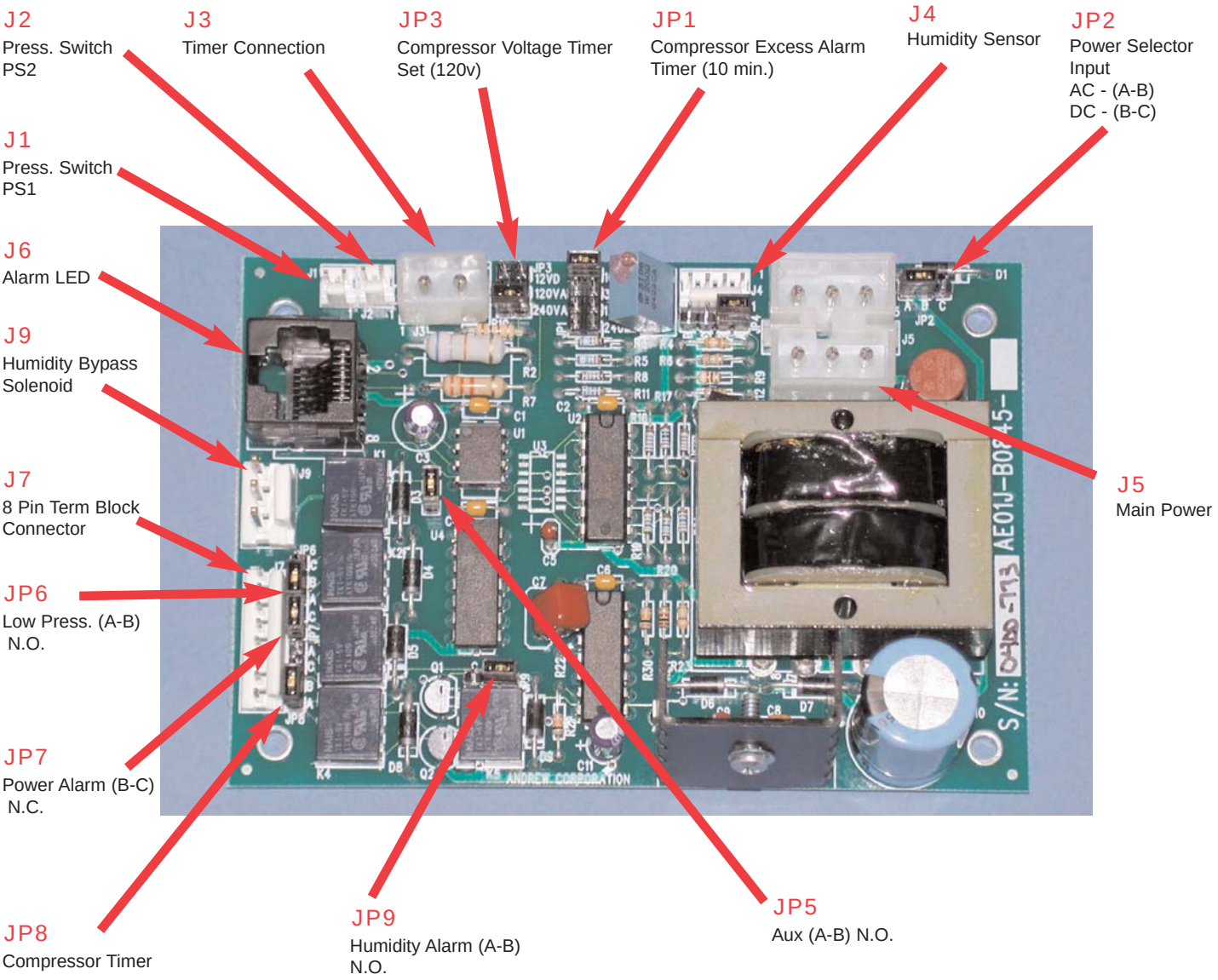


Figure 2

1.5 Specifications PMT200 Dehydrator

Output Pressure Constant	5.0 PSI (35kPa)
Output capacity	12.0 SCFH (340liters/h) (total, approx.) 0.2 SCFM (5.6 liters/m)
Output Dew Point,	-50°F (-45°C) or better
Operating Temperature Range	-34° to +104° F (1° to +40° C)
Low Pressure Alarm	1.0 lb/in^2 (6.9 kPa)
Electrical Input	115/230 VAC, 50/60 Hz (switchable)
Output Connector	3/8" polytube, compression
Dimensions	18" W x 17.5" H x 7" D 457mm H x 444.5mm W x 178mm D
Weight	36 1/2 lbs 16.55 kg
Optional Alarms	
High Humidity Alarm Set Point	7.5% RH, factory set
Excess Run Alarm Set Point	10 minutes, factory set
Power Fail Alarm	loss of input power

Installation
Section 2

2.1 Unpacking and Inspection

Open carton.

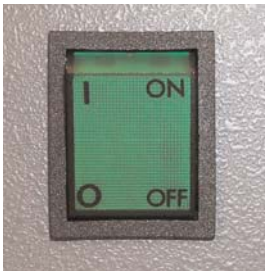
Remove the top peice of corrugated packing. Carefully remove the installation accessories and manual and dehydrator. Check the dehydrator for shipping damage such as dents or loose parts.

2.2 Controls and Displays

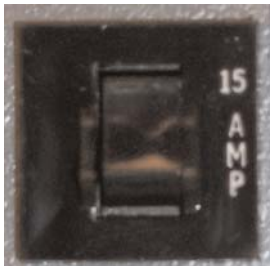
Familiarize yourself with the controls and displays prior to installing or testing the dehydrator.

Dehydrator Controls/Displays

Pressure Gauge - indicates dehydrator output pressure in psi and kPa.



ON/OFF Switch - controls compressor and sensors. Light indicates power switch is ON.



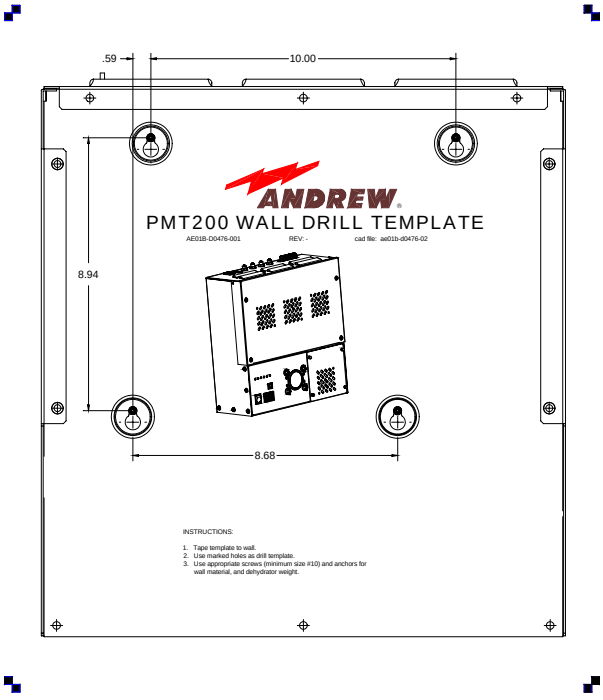
Circuit Breaker - white tab indicates a circuit overload. Push to reset.

Hour Meter - provides a visual indication of the number of hours of compressor operation and provides validation for the 3000 hour warranty.

2.3 Installing the Dehydrator

2.3.1 Wall Mounting

See drill template AE01B-D0476-001.



2.4 Power Connections

Confirm your dehydrator electrical input matches the available power.

115 VAC/230 VAC
(switchable)
PMT200-89015
PMT200-89315

WARNING!

Verify the voltage switch on top of the unit is in the correct position before applying power!

2.4.1 AC Power

AC units can be connected into a standard 15 Amp power receptacle of the proper voltage. Make sure the power circuit is properly grounded.

Two power cords are supplied, one 115 VAC American and one 230 VAC International.

Verify the front panel Power switch is OFF.

CAUTION:

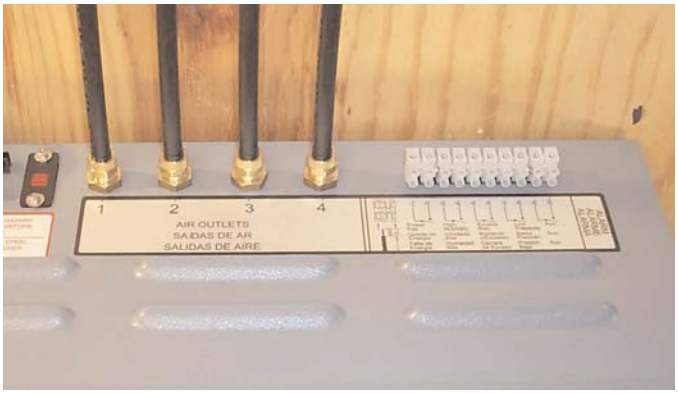
Proper electrical connection is required. It is suggested a licensed electrician be contracted to connect the AC wiring to the unit, if it is connected directly to the mains. Failure to properly connect the power wires could result in a dangerous electrical shock hazard.

Test the Dehydrator

Turn the dehydrator ON and check the output ports on top of the unit to make sure air flowing. To do this make sure that corresponding shut-off valve is open and the plugs are removed from the ports.

2.5 Connecting the Low Pressure Alarm Output

To connect the low pressure alarm, locate the terminal block (TB-1) on top of the unit.



Place alarm connection wires in proper in proper terminals and tighten the screw on the terminal block.

When a low pressure alarm condition exists dry contacts are activated at terminal block TB-1. An alarm condition exists when pressure falls below 1.0 lb/in^2 (6.9 kPa) for all PMT200 models. The relay contacts are rated at 2 A (non-inductive), 30 VDC.

Optional alarms (if purchased) will also be located on this terminal (see section 1.4 for terminal numbers).

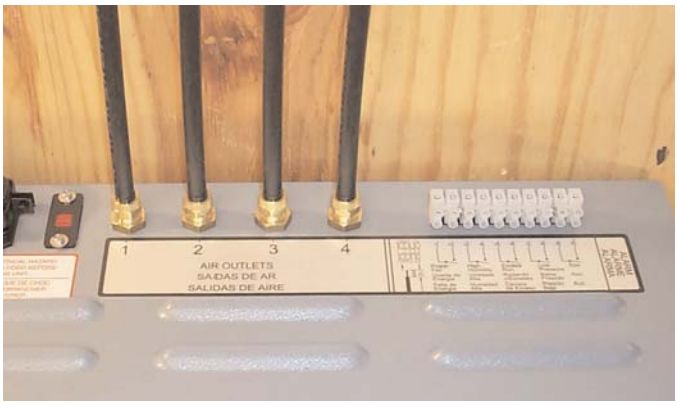
2.6 Connecting Dehydrator to the Transmission Line

CAUTION:

Check the antenna and transmission line system pressure rating before connecting the dehydrator to the system.

Insert one end of the 3/8" polytube feed line tubing into the compression fitting on the dehydrator output port. Tighten securely with a 9/16" wrench. Be careful not to over tighten. Connect the other end of the polytube to the transmission line.

Four air outputs are provided, with individual shut-off valves on the unit. Make sure that the valve is open position for each transmission line connection. If one of the output connection is not used, close the valve and leave the port capped.



Note:

If the transmission lines have not been purged, continue with section 2.7. Otherwise proceed to section 3.

2.7 Purging the Transmission Line

Air in the transmission line system must be replaced with dry air to ensure satisfactory operation of the transmitted signal.

1. Determine the total system volume.
2. Divide the system volume by the flow rate of the dehydrator (12 CFH) to determine the number of hours needed for the purge cycle.
3. Open the far end of the transmission line.
4. Operate the dehydrator for three purge cycles.

If it is not possible to open the far end of the transmission line, follow these steps:

1. Connect the dehydrator to the transmission line and pressurize the system. The system pressure should reachs 5.0 PSI.
2. Wait 15 minutes while the air absorbs moisture in the system, then disconnect the dehydrator from the transmission line and allow the air to vent.
3. Repeat steps 1 and 2 twelve times to purge the system.

Maintenance
Section 3

3.0 Maintenance

The PMT200 Dehydrator requires relatively little maintenance to ensure satisfactory operation over long periods of time. This section outlines the recommended annual preventive maintenance for the unit and the suggested overhaul for every 6000 hours of compressor operation.

3.1 Regular Maintenance

The PMT200 Dehydrator will perform at an optimum if it is routinely checked for correct performance. This checking generally consists of an annual inspection of the condition of the air intake filter and an overhaul after every 6000 hours of compressor operation. Performance of these measures is sufficient to ensure continued reliable operation.

3.2 Preventive Maintenance

The annual maintenance of a PMT200 consists of a preventative maintenance inspection of the dehydrator and cleaning (or replacement) of the foam air intake filter.

These tasks can easily be performed in the field with the unit connected to the transmission line system and with only the front access door opened for maintenance.

3.3 Dehydrator Filter Element Replacement

Clean/replace the air intake filter

The air intake filter protects the compressor from contamination and dust. Periodic cleaning/replacement extents the life of the compressor.

To gain access to the element, use a ball-point pen or similar object to snap the perforated black cover off of the cylindrical black filter housing.

The filter is made of open-cell foam material. It should be cleaned or replaced once a year (or more frequently, if the operating environment is very dusty.)

Wash the filter in running water, squeezing it between the fingers.

Squeeze and shake out any excess water and return the element to the filter housing

CAUTION:
Do not apply oil or other chemicals to the filter element.

Make sure the element is seated completely in the housing and then replace the cover. If a new element is used, discard the old element.

3.4 Annual Inspection

Warning:
Electrical Hazard! Unplug power cord before servicing unit.

Inspection includes checking for loose or damage hoses, fittings and electrical connections. Open the front door and verify that there is no water build-up in the two filter bowels located inside the front cover of the dehydrator. There may be some droplets of water vapor in the filter bowels (the lower portion of each bowl), but there should be only a small amount of liquid in either bowl.

If there is excessive water, refer to the troubleshooting section. Replacement of the filter elements in the water filter and coalescing filter is covered in the overhaul section of this manual.

Check the electrical connections.

Check the screw at the power input connector to ensure that the AC power cord is securely terminated. Check the screw-in alarm terminals to ensure that all wire connections are tight.

A loose or damaged connection may result in erratic operation and unnecessary downtime. Refer to the troubleshooting section if an electrical problem is encountered.

Check the ground wire.

Check that an electrical safety ground is installed on the stud on top of the dehydrator. This connection point is adjacent the power input connector. (It is intended to be customer installed in the field.)

Check the hour meter

Check the hour meter on the front panel to determine the duty cycle of the dehydrator.

If the dehydrator has been running for more than 10-15% of its installed time, check the systems for leaks. Also check the time on the meter to determine if it is time to perform the 6000-hour overhaul.

3.5 Parts Replacement and Dehydrator Overhaul

Andrew PMT200 Dehydrators are designed to give many years of trouble-free service and require very minimal maintenance. The dehydrator contains, as a standard feature, a hour meter that records compressor run hours. To ensure continuous and reliable operation, the dehydrator must be overhauled every 6000 hours of compressor operation. The kit listed below, contains all of the necessary parts to perform this overhaul.

Maintenance Parts:

1. Dehydrator Overhaul Kit 1ea., AE01K-C0398-015

2. Compressor Air Intake Filter bag of 6, EFLTR-91101

The dehydrator overhaul kit includes parts to overhaul the compressor and critical components in the dehydrator that often become worn over time.

These include replacement water filter elements with new o-rings.

A compressor overhaul kit is also part of the dehydrator overhaul kit.

This kit contains a new cylinder and piston, along with new gaskets and head screws.

IN CASE OF DIFFICULTY: If the dehydrator is not operating, refer to the sections on installing and troubleshooting the unit.

Tools

The following tools are used in the maintenance and overhaul procedures.

A ballpoint pen, an adjustable open-end wrench, a socket wrench with a 7/16-inch (or 11mm) socket, a No. 2 Phillips screwdriver and a small flat-blade screw-driver

Overhaul Procedure

When the PMT200 compressor run time reaches 6000 hours (or a multiple of 6000 hours) it is time to replace certain items in the compressor and the air path of the dehydrator. These include the piston cups, piston seals and head gaskets of the compressor, the filter elements in the water and coalescing filters and the tube section connecting the compressor output to the water filter input.

Unit Shutdown and Removal

In order to perform an overhaul on the PMT200, the unit must be turned off and removed from service. As this is being done the low pressure alarm may active through a reporting alarm system. Personnel monitoring such an alarm should be notified in advance so that they are aware of the fact that service is being performed. It is also necessary to disconnect the dehydrator dry air output from the waveguide system during the overhaul.

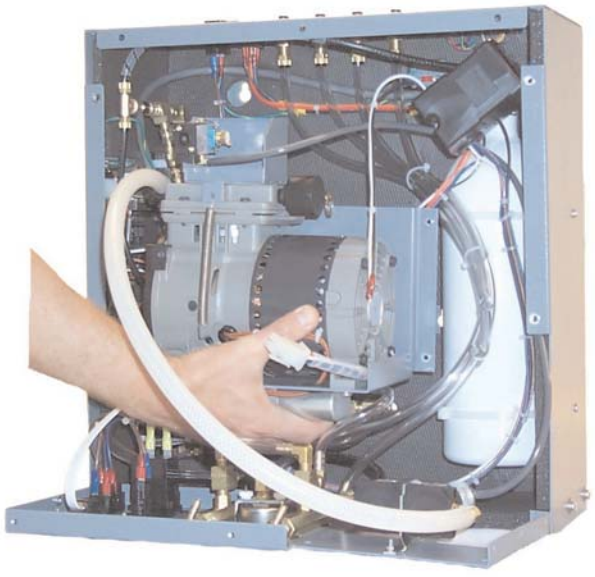
Remove the compressor for overhaul.

To remove the compressor open the upper front panel of the unit.

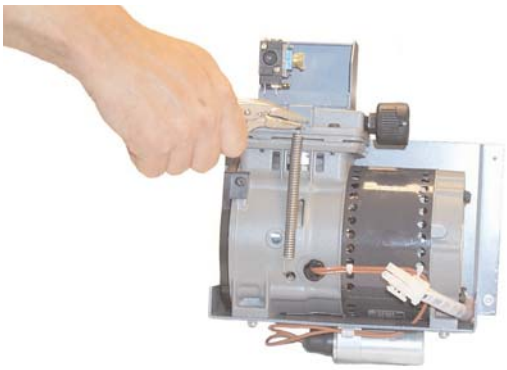
Detach the two wires from the solenoid upper part of compressor (shown in circle “A”).

Disconnect the motor power connector (shown in circle “B”).

Detach the gray tubing from the right side of the coelescing filter (shown in circle “C”).



1. The compressor assembly can be removed by loosening the four screws from the front of the chassis. Use the other hand to support the weight of the compressor as it becomes loose.



2. Gain access to the compressor head by releasing the springs holding the solenoid assembly in place.

CAUTION:
The springs are under tension.

Follow the instructions included in the compressor overhaul kit. When the overhaul is complete, reinstall.

3.6 Service Restoration

RECOMMENDATION:

If the dehydrator overhaul process has taken more than a few hours, it is recommended that the unit be run for one hour into the room, to purge the membrane dryer and tank of any acquired moisture, before reconnecting to the transmission line system.

Troubleshooting
Section 4

If you experience difficulty with your dehydrator, use the troubleshooting procedures described below.

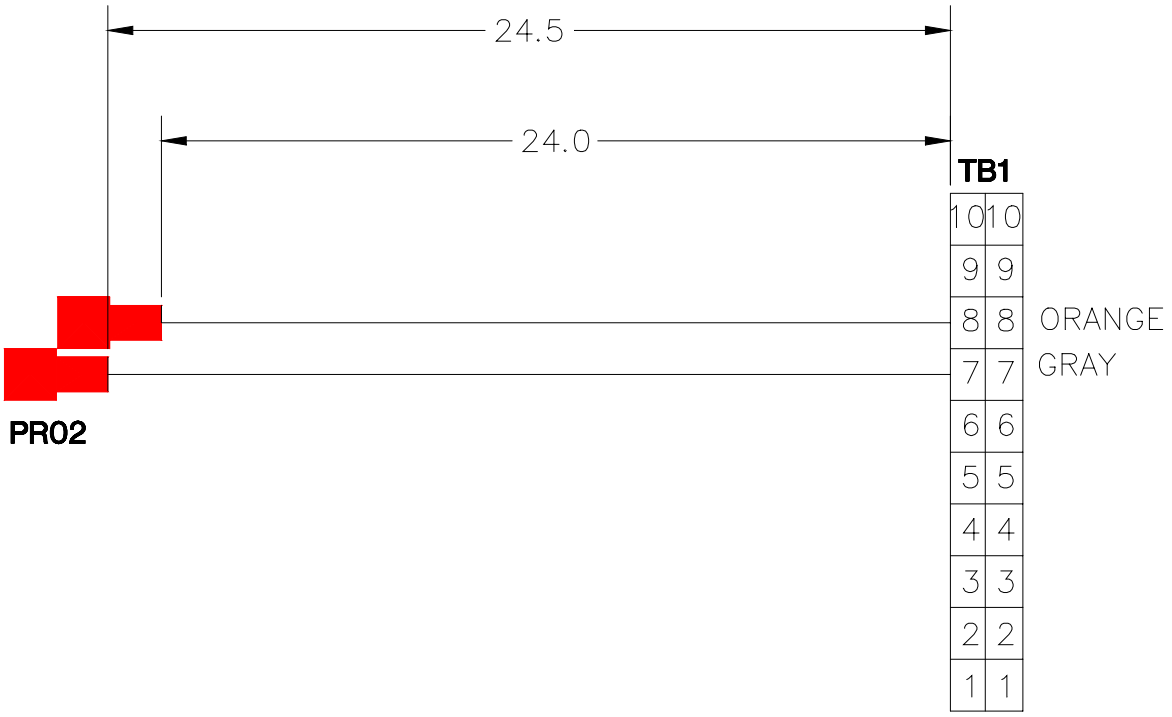
Caution: Electrical troubleshooting requires access to potentially dangerous voltages and should only be per formed by a licensed electrician.

Problem/Condition	Solution
Dehydrator on/off switch does not light, unit does not run.	Check the breaker adjacent to the on/off switch. If the breaker is tripped, (white indicator exposed) then reset the breaker.
	If the on/off switch light still falls to light, make sure the unit is plugged in and power outlet is operating.
	If you still have no light, unplug the unit, remove the unit cover and check for loose connections. Refer to the wiring diagram for proper connections.
Dehydrator on/off switch does not light, unit runs.	Disconnect power, remove cover, check for loose connections per the wiring diagram. Replace cover and reconnect input power.
	If condition persists, replace on/off switch.
Low-pressure alarm activated.	Turn shut-off valve to the off position and observe pressure gauge. The pressure gauge line should read approximately 5.0 psi and the alarm should clear. If alarm does not clear, remove cover and verify wiring to low pressure alarm switch.
	If the pressure does not stay constant after shutting off the valve, apply leak detector to isolate the leak in the dehydrator (exercise care when applying solution not to wet wiring or electronics).
	With dehydrator isolated from transmission line, observe pressure in transmission line. If pressure drops, use a leak detector solution to locate leaks in the transmission line. Repair leaks if possible.
	If the problem persists contact Andrew Customer Service.
Compressor does not turn.	Check the breaker adjacent to the on/off switch. If the breaker is tripped, (white indicator exposed) then reset the breaker.
	Check power switch to make sure that it is on and lighted.
	Check input power polarity and voltage per wiring diagram.
Circuit breaker tripped.	Check wiring connections per wiring diagram. If breaker trips again, replaces the breaker. If the replacement breaker trips contact Andrew Customer Service.
Filter bowls show excessive water.	Assure that the drain line tubing (exiting the bottom of the unit) is not clogged. When the compressor cycles off, air and moisture should rough out of the drain line.

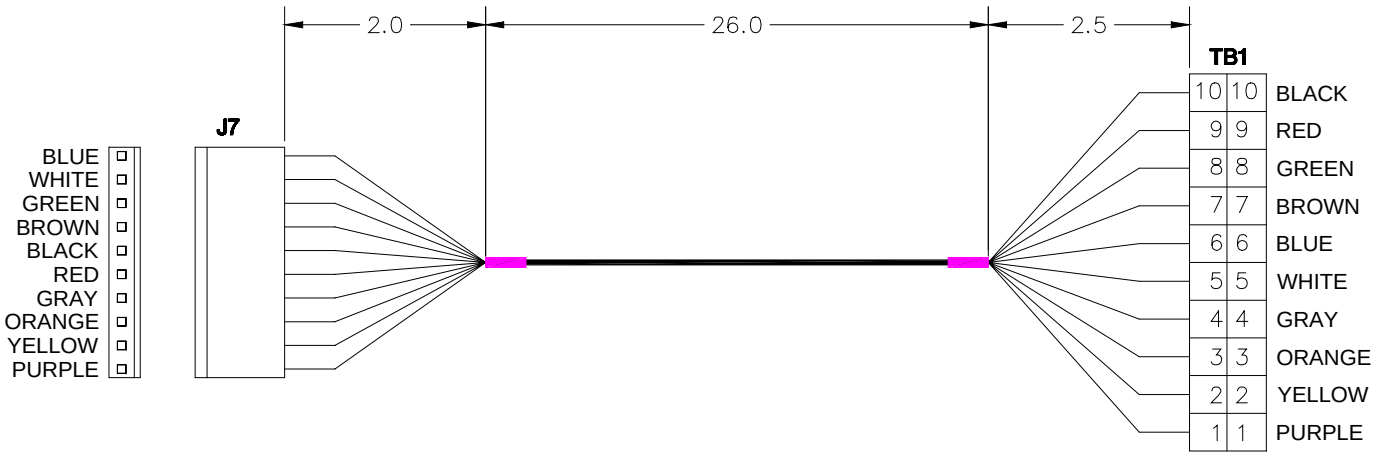
SCHEMATIC WITH ALL OPTIONS

Alarm(s)

Low Pressure Alarm Harness



Multi Alarm Harness



Replacement Parts
Section 5

The following is a list of the replacement parts for the PMT200 series dehydrators:

Description	Part Number
Compressor	AE01J-A1956-101
Inlet Filter	EFLTR-20201
Pressure Gauge	.EGAUG-42100
Valve, Over-Pressure	AE01J-A0174-007
Circuit Breaker	EBREK-11576
ON/OFF Switch (115V)	AE01J-A0129-005
LP Alarm Switch	AE01J-A0734-010

Compressor Control Switch	
PMT200-8XXXX	AE01J-A0731-001
Alarm Board	AE01J-B0845-101
RH Alarm Sensor Cable	AE01C-D0785-001
Filter Bowl Dual Head	AE01J-A1978-001
Overhaul Kit	AE01K-C0398-015
Filter Bowl (only)	AE01J-A1978-101

Filter Elements	
Water Filter Element	AE01J-A1978-203
0.01 micron Coalescent Elemen	AE01J-A1978-201

Customer Service
Section 6

6.0 Introduction

Andrew provides in-warranty and out-of-warranty repairs as well as dehydrator and compressor overhauls from several Repair Centers. Coordination of these services is provided through the nearest Sales Office or Customer Service Center. The Center is also prepared to help you with the following:

Technical Assistance
Troubleshooting
Repairs
Loaner Units
Spare Parts
Installation Materials
System Accessories.

6.1 In Case of Trouble

The first step you should take if trouble develops using a dehydrator is to read the operators manual and follow the trouble isolating procedures given in it.

If the steps in the manual do not identify and remedy the problem, then contact an Andrew Customer Service Center for 24-hour telephone assistance. Record the Model Number (e.g. PMT200) and Serial Number from the product label, as you will be asked for these when you call. Two main locations are currently available to help:

in North America ---
1-800-255-1479

in Europe ---
+44 1592 782612

any Location (to USA)
(708) 349-3300

If you find it easier to describe your troubles by Fax, then the following numbers are also available:

in North America ---
1-800-349-5444 (Fax only)

in Europe ---
+44 1592 782380 (Fax only)

any Location (to USA)
(708) 349-5410 (Fax only)

6.2 Initial Steps by Andrew

When your call or fax communication is received, the Andrew staff will work with you to pinpoint the possible cause of trouble. If the pressurization equipment is suspect, they will:

* ask for your unit Model Number and Serial Number
* check the warranty status of the unit
* advise the availability of a loaner unit
* provide an estimate of the cost for inspection and repairs, if the unit is out-of-warranty
* fax a Return Goods Authorization Sheet to you.

6.3 Return Goods Instructions

After you have contacted Andrew and received a Return Goods Authorization Number (RGN), you will need to take the following steps to send the faulty unit to a Repair Center:

* make a copy of the Return Goods Authorization Sheet that was faxed to you
* write a brief description of the trouble you are encountering and attach this to the copy of the sheet
* pack the unit (with at least 4-inches of protec tive packaging on all sides)
* enclose the authorization sheet and trouble description within the box
* mark the outside of the box with the RGN
* return the box to the Repair Center address listed on the authorization sheet.

If you have saved the original packaging that came with the unit, use it to return the dehydrator for repair.

If a loaner unit (of the same type) was supplied by Andrew, use the loaner unit box to return the original dehydrator

6.4 Repair Center Process

The Andrew Dehydrator Repair Center will receive your unit and inspect it for any transport damage. The unit will then be analyzed for troubles using the description you have supplied and the specialized experience the Center staff have with dehydrators.

If the unit is in-warranty, repairs are made at no charge and the unit will be returned to you by the same mode of transport as it was received.

If the unit is in-warranty, but no problems are found, the unit will be thoroughly tested before being returned to you. A nominal inspection fee will be charged for this service.

If your unit is out-of-warranty, it will be inspected and you will be advised of the estimated cost of repairs, before the Center proceeds with any work. You may elect to scrap the unit or accept the estimated charge for repairs. If you elect to scrap the unit, you will be billed the nominal inspection fee. If you elect repairs, you will be billed for the inspection fee, parts consumed and labor necessary to do the repair.

6.5 Loaner Units

The Andrew dehydrator Repair Centers stock a limited number of "loaner" dehydrator units of both current and discontinued products. These units, while not new, are still in excellent working order.

Loaners are available on a first-come first-served basis. They are issued in conjunction with the original RGN and are invoiced at a nominal price. You will need to request a second RGN to return the loaner unit. A credit memo is issued by the Repair Center when a loaner is returned

This page was left blank.

Pressurization Systems
Richardson, Texas U.S.A. 75082
www.andrew.com

Dehydrator and Line Monitor System Three Year Warranty

Andrew warrants that any Andrew MT050, MT/XT300, 600, 1700, PMT/ODPMT200, MR/MRS050 Dehydrator and any Line Monitor System is transferred rightfully and with good title: that it is free from any lawful security interest or other lien or encumbrance unknown to Customer and that for a period of thirty-six (36) months from the date of installation or 3000 hours of actual run time, whichever shall occur first, such equipment will be free from defects in; material and workmanship that which arise under proper and normal use and service. Customer's exclusive remedy hereunder is limited to correction by Andrew (either at its plant or at such other place as may be agreed upon between Andrew and Customer) of any such defects by repair or replacement at no cost to the Customer provided that the cost of any in transportation in connection with the return of the equipment for the purpose of repair or replacement shall be borne by Customer. The provisions of this warranty shall be applicable with respect to any equipment Andrew repairs or replaces pursuant to it.

ANDREW MAKES NO WARRANTY, EXPRESS OR IMPLIED, OTHER THAN AS IS SPECIFICALLY STATED ABOVE. EXPRESSLY EXCLUDED ARE ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PURPOSE. THE FOREGOING SHALL CONSTITUTE ALL ANDREW LIABILITY (EXCEPT AS TO PATENT INFRINGEMENT) WITH RESPECT TO THE EQUIPMENT. IN NO EVENT SHALL ANDREW BE LIABLE FOR SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES, INSTALLATION COSTS, LOST REVENUE OR PROFITS, OR ANY OTHER COSTS OF ANY NATURE AS A RESULT OF THE USE OF EQUIPMENT MANUFACTURED BY ANDREW, WHETHER USED IN ACCORDANCE WITH INSTRUCTIONS OR NOT. UNDER NO CIRCUMSTANCES SHALL THE ANDREW LIABILITY TO CUSTOMER EXCEED THE ACTUAL SALES PRICE OF THE EQUIPMENT PROVIDED HEREUNDER. No representative is authorized to assume for Andrew any other liability in connection with the equipment.

This page was left blank.